



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/732,712	12/11/2000	Taizou Itou	Q57601	2910

7590 07/26/2005

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037-3202

EXAMINER
----------

GAKH, YELENA G

ART UNIT	PAPER NUMBER
----------	--------------

1743

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/732,712

Applicant(s)

ITOU ET AL.

Examiner

Yelena G. Gakh, Ph.D.

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 7-21 and 23 is/are pending in the application.
- 4a) Of the above claim(s) 11, 12 and 17-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 7-10, 13-16 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 06/10/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. The response filed on 06/10/05, is acknowledged. Claims 1, 7-21 and 23 are pending in the application. Claims 11-12 and 17-21 are withdrawn. Claims 1, 7-10, 13-16 and 23 are considered on merits. No amendment is made to the pending claims in response to the previous Office action.

#### ***Response to Amendment***

2. The examiner re-establishes objection to the specification. Allowance of the pending claims is withdrawn and the claims are rejected over the prior art submitted by the Applicants.

#### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the apparatus, which allows evaporating liquefied ammonia, as described in the specification, rather than heating a gaseous phase moiety of liquefied ammonia. To differentiate between vapor of the liquefied ammonia and the gaseous phase moiety of the liquefied ammonia, a pipe, which is inserted in the liquefied ammonia in the tank and used to draw the liquefied ammonia from the tank to the heater, should be shown on Figure 1. Otherwise, Figure 1 demonstrates two identical tanks with pipes for withdrawing gaseous phase moiety of the liquefied ammonia, one of which is heated.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and

Art Unit: 1743

appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

4. The specification is objected to as containing the subject matter, which is not written in such a clear and definite form as to allow any practitioner in the art to use the method in its most efficient way.

The specification discloses measuring a trace amount of water in purified ammonia using IR. While the goal of the method disclosed is measuring water present in the amounts of less than 10 ppm, 1 ppm and even less than 0.1 ppm, the reference gas used for such measurements is described as containing less than 10 ppm of water. It is not clear, how is it possible to quantitatively measure less than 1 ppm or even 0.1 ppm of water in analytical gas, when the reference gas may contain 10 and even 100 times more water than the analyte sample, especially the unknown amount of water in the reference gas? Also, according to Figure 1, the reference and the analyte samples are taken from two separate tanks, which may contain different amount of water, even if it less than 10 ppm each.

Further, the measurements are taken at certain wave numbers, corresponding to the ranges where water and ammonia signals are not overlapped. Since nothing is said about measuring (running) IR spectra for the reference and analyte samples first, it is not clear, if actually the real IR spectra are taken. If actual IR spectra are taken, no subtraction of the IR spectrum of the reference from the IR spectrum of the analyte is discussed, although using IR spectrum of the reference gas as the background is mentioned. Therefore, it is not clear, if such subtraction takes place, or not. If both IR spectra are measured, but no subtraction takes place, then it is also not clear, how correction for the huge signal of  $\text{NH}_3$  is done.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. **Claims 1, 7-10, 13, 15-16 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10281988, IDS in view of any of WO 96/39265, JP 11507004 or JP11509980, IDS (as disclosed in the JPO Office action).

JP 10281988 "discloses the invention regarding a measuring method of the water concentration is an ammonia gas, wherein, filling a reference cell with a high-purity ammonia containing no impurities and applying a measurement gas into a measurement cell having a volume of about 31 mL or more ([0012]) at a rate of 0.2 L per minute ([0034]), the water content present as impurities in the measurement cell is determined by the difference in the amount of

Art Unit: 1743

the transmitted light at the water-absorption wavelength between the above measurement cell and the reference cell”.

While according to JPO Office action, JP 10281988 does not specify using vapor of liquefied ammonia as a reference gas, any of WO 96/39265, JP 11507004 or JP11509980 teach “that high-purity ammonia gas with little impurities can be obtained by sampling a gas phase from retained liquefied ammonia”.

It would have been obvious for any person of ordinary skill in the art to modify JP 10281988 by implying “high-purity ammonia gas with little impurities ... obtained by sampling a gas phase from retained liquefied ammonia” as taught by WO 96/39265, JP 11507004 or JP11509980, because this simplifies obtaining essentially pure reference gas as a background for measuring presence of water in liquefied ammonia. It would have been obvious to detect water in the IR region, which does not contain major ammonia signals.

9. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10281988 IDS in view of any of WO 96/39265, JP 11507004 or JP11509980, as applied to claims 1, 7-10, 13, 15-16 and 23 above and further in view of Muromura (US 4,075,306).

JP 10281988, WO 96/39265, JP 11507004 or JP11509980 do not specify the way of drying ammonia.

Muromura teaches drying ammonia gas stream using sodium metal.

It would have been obvious for anyone of ordinary skills in the art to apply JP 10281988-WO 96/39265/JP 11507004/JP11509980 method of measuring water trace in ammonia in production ammonia dried according to Muromura’s method, because the aim of JP 10281988-WO 96/39265/JP 11507004/JP11509980 method is determining remaining moisture in dried ammonia.

### ***Response to Remarks and Arguments***

10. Applicants’ arguments filed 06/10/05 have been fully considered but they are not persuasive.

Objection to the Drawings. It is not quite apparent what was unclear in the examiner’s objections to the drawings, but the applicants interpreted these objections absolutely correctly.

Art Unit: 1743

Regarding the Applicants' response; the examiner agrees that the drawings are not necessary for the method application. However, since the drawings are presented in the disclosure, they serve to clarify the subject matter of the invention, rather than confuse it, as it happened in the instant case. The specification is written in a quite obscure language, and obviously is a literal translation from Japanese. Therefore the drawings in this case become a necessity for correct understanding of the invention; however, the drawings presented in the application do not fulfill this requirement. Figure 5 does reflect the changes that the examiner would rather see incorporated in Figure 1. The examiner however withdraws the objection to Figure 4.

The examiner re-establishes the objection to the specification.


Rejection of the elected claims is established on the grounds of the newly presented applicants' IDS.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yelena G. Gakh, Ph.D. whose telephone number is (571) 272-1257. The examiner can normally be reached on 9:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7/21/05

  
**YELENA GAKH**  
**PRIMARY EXAMINER**